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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,611	09/14/2001	Takuya Nakashima	L7016.01127	7319

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EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,611

Applicant(s)

NAKASHIMA ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/12/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 5, 6, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 6, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1, 5, 6, 11, and 12, after entry of the amendment filed on September 6, 2005. New grounds of rejection are applied to the claims herein. As such, prosecution is reopened and this action is non-final.

Claim Rejections - 35 USC § 103

2. Claims 1, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito (U.S. Patent 6,124,057).

The reference is directed to a non-aqueous electrolyte secondary battery. The positive electrode comprises a lithium manganese oxide (see col. 5, line 11). The negative electrode contains graphite powder and an active material that may comprise SrCO_3 (see Table 4; col. 5, line 22)

The reference does not expressly teach the weight percent of strontium as recited in claim 1.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be sufficiently skilled to adjust the weight percentage of strontium carbonate in the negative electrode mixture so as to affect the resulting properties of the electrode. Table 4 discloses the discharge capacity and

capacity maintenance of the exemplary batteries of the invention. It would be well within the skill of the art to incorporate varying amounts of strontium carbonate to affect these properties. As such, the claimed range is not considered to distinguish over the reference.

3. Claims 1, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-180758.

The reference is directed to a non-aqueous electrolyte secondary battery. The positive electrode comprises a lithium manganese oxide (see par. 0014). The negative electrode contains an active material and graphite powder (see par. 0046). As disclosed the abstract, the positive or negative electrode may comprise an alkali or alkaline salt. This salt may be Na_2CO_3 or NaHCO_3 (see par. 0062).

The reference does not expressly teach the weight percent of sodium as recited in claim 1.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be sufficiently skilled to adjust the weight percentage of sodium carbonate in the negative electrode mixture so as to affect the resulting properties of the electrode. Table 1 discloses the capacity maintenance of the exemplary batteries of the invention. It would be well within the skill of the art to incorporate varying amounts of sodium carbonate to affect these properties. As such, the claimed range is not considered to distinguish over the reference.

Art Unit: 1746

4. Claims 1, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 880187.

The reference is directed to a non-aqueous electrolyte secondary battery. The positive electrode comprises a lithium manganese oxide (see p. 4, line 25). The negative electrode contains graphite powder and an active material that may comprise Na_2SiO_3 (see p. 4, line 32; Table 2).

The reference does not expressly teach the weight percent of sodium as recited in claim 1.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be sufficiently skilled to adjust the weight percentage of Na_2SiO_3 in the negative electrode mixture so as to affect the resulting properties of the electrode. Table 2 discloses the capacity maintenance of the exemplary batteries of the invention. It would be well within the skill of the art to incorporate varying amounts of Na_2SiO_3 to affect these properties. As such, the claimed range is not considered to distinguish over the reference.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '187, JP '758 or Ito et al. as applied to claims 1, 11, and 12 above, and further in view of Iwata et al (U.S. Patent 6,168,888).

None of the applied references teaches that the lithium manganese oxide is a cubic material possessing the properties recited in instant claim 5.

Iwata et al. is directed to a cubic spinel-type lithium manganese oxide containing heteroelements (see abstract). In column 2, line 48, the reference teaches that the lattice constant is between 8.19 and 8.24 angstroms. In column 2, line 63, the reference teaches that the average particle diameter is 1-50 microns and the BET surface area is 0.1-5 m²/g.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the lithium manganese oxide of Iwata et al. in the batteries of EP '187, JP '758 or Ito et al. In column 1, line 51, Iwata et al. teach the following:

It is an object of the present invention to provide a high-performance spinel-type lithium-manganese oxide for use as a material for positive electrodes of a Li secondary battery with inhibited Mn dissolution in an organic electrolyte, as well as a high-performance lithium secondary battery using said lithium-manganese oxide as a positive electrode.

As such, the artisan would be motivated to use the lithium manganese oxide of Iwata et al. in the batteries of EP '187, JP '758 or Ito et al. thereby rendering the subject matter of claim 5 obvious.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '187, JP '758 or Ito et al. as applied to claims 1, 11, and 12 above, and further in view of Wang et al (U.S. Patent 5,532,084).

Art Unit: 1746

None of the applied references expressly teaches that the lithium manganese oxide is a rhombic system material possessing the properties recited in instant claim 6.

Wang et al. is directed to a manganese dioxide product (see abstract). In column 4, line 32, the reference teaches that the manganese dioxide is orthorhombic with lattice constants of 4.5, 9.28, and 2.87 angstroms.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the manganese dioxide of Wang et al. in the batteries of EP '187, JP '758 or Ito et al. In column 2, line 23, Wang et al. teach the following:

new name) in the figures and description herein. The P-CMD product of the invention when used as cathode active material in electrochemical cells, particularly alkaline and lithium cells, provides these cells with higher capacity and energy density per gram than are obtainable from the same cells employing conventional chemical manganese dioxide (CMD) or electrolytic manganese dioxide (EMD). Additionally, the discharge voltage profiles of cells, particularly lithium cells, containing the P-CMD as cathode active material, are higher than in conventional cells employing EMD or CMD cathode material. This is very attractive in that the use of P-CMD as cathode material can result in a higher power cell. The P-CMD product is characterized by

Accordingly, the artisan would be motivated to use the manganese oxide of Wang et al. in the batteries of EP '187, JP '758 or Ito et al., thereby rendering the claimed lattice constants obvious. Furthermore, the artisan would be sufficiently skilled to manipulate the average diameter and surface area of the manganese dioxide so as to fall within the claimed ranges. These parameters are known to affect the resulting electrochemical properties of an active material. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Art Unit: 1746

Conclusion

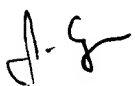
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Yamada et al. (5,972,536), discloses the use of KOH and NaOH in the manufacture of Na-and K-containing carbonaceous negative electrode materials (see Examples E1 and E3).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
September 16, 2005